



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
| 09/462,171 | 03/27/00 | BRAUN | E 104946 |

OLIFF & BERRIDGE
PO BOX 19928
ALEXANDRIA VA 22320

MMC1/0320

EXAMINER

JACKSON JR. J

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 03/20/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

462171

Applicant(s)

Braun

Examiner

J

Group Art Unit

2815

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☐ Responsive to communication(s) filed on _____.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-31 is/are pending in the application.
 - Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-31 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____.
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 9
- ☒ Notice of Reference(s) Cited, PTO-892
- ☒ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

Art Unit: 2815

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-31 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. There is no enablement for p-n junction devices. There is no enablement for the fabrication and structure of the combined semiconductor and organic base pair structure as for example in figure 5. There is no enablement for the exact fabrication of the field effect device with narrow DNA/metal gate in figure 12. There is no teachings of the exact method to form the apparent gate groove, the method of aligning the gate structure, method of aligning the source/drain/gate regions, etc. The specification teaches a method of coating a DNA strand with silver metal but there is no exact description of how to make the claimed p-n junction devices. Mere drawings of devices is not enabling for structures of these small dimensions and materials. There is also no evidence that structures formed by adjacent n-type polymers and p-type polymers of single molecule thickness will function as p-n junction diodes or bipolar transistors, etc. as claimed. There is also no enablement for the single electron transistor device of figure 6. Applicant should submit evidence of working devices with diode or transistor behavior for enablement. Otherwise there appears to be enablement for metallic coated DNA wires only which are not in themselves "p-n" junction devices.

Art Unit: 2815

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-31, inasmuch as the claims can be limited to "wires", are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mirkin et al.

Mirkin teaches conductive organic DNA "fibers" and "clusters" of "conductive" material which may be labeled a "wire".

6. Claims 1-31, inasmuch as the claims can be limited to "wires", are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Coffey et al.

Coffey teaches "wires" of DNA and semiconductor particles.

7. Claims 1-31, inasmuch as the claims can be limited to wires, are rejected under 35 U.S.C. 103(a) as being unpatentable over Coffey or Mirkin with Hopfield.

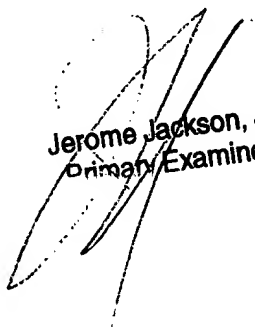
Art Unit: 2815

Hopfield teaches organic "strands" connected to electrodes for "electrical communication". Connecting the "wires" of Coffey or Mirkin to similar electrodes for electrical communication would have been fundamentally obvious to one of ordinary skill in the art, particularly in view of Hopfield.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See Ackley and '550.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerome Jackson whose telephone number is (703) 308-4937. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


Jerome Jackson, Jr.
Primary Examiner